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Listing of the Claims

1. (previously presented) A method for preventing photo-induced chemical attack on a copper oxide containing surface comprising the steps of:

providing a substrate comprising a dielectric material and an exposed copper containing surface comprising copper exide;

providing an acidic cleaning solution for contacting the exposed copper containing surface; and,

shielding the exposed copper containing surface to substantially block incident light from impacting the exposed copper containing surface while contacting the exposed copper containing surface with the acidic cleaning solution.

- 2. (previously presented) The method of claim 1, wherein the substrate further comprises a semiconductor wafer and the copper containing surface comprises copper filled metal interconnects.
- 3. (previously presented) The method of claim 1, wherein the incident light has a wavelength of between about 300 nanometers and about 800 nanometers.
- 4. (original) The method of claim 1, wherein the acidic cleaning solution has a pH of between about 3.0 to about 4.5

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- 5. (original) The method of claim 2, wherein the step of shielding is performed during a post-CMP cleaning process.
- 6. (previously presented) The method of claim 5, wherein the post-CMP cleaning process comprises contacting the substrate with the cleaning solution according to at least one of a dipping process, a brushing process, and megasonic cleaning process.
- 7. (original) The method of claim 6, wherein the post CMP cleaning process is automated for processing a substrate through a plurality of cleaning stations.
- 8. (previously presented) The method of claim 1, wherein the step of shielding comprises placing a light blocking means between the incident light and the copper containing surface.
- 9. (previously presented) The method of claim / wherein the step of shielding comprises placing a light blocking means to at least partially surround each of the plurality of cleaning stations.

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10. (previously presented) A method for preventing photo-induced chemical attack of a cleaning solution on a copper containing surface comprising the steps of:

providing a copper containing surface comprising a dielectric layer formed on a semiconductor wafer;

performing a copper CMP process;

providing an acidic cleaning solution for cleaning the copper containing surface; and,

shielding the cleaning solution and the copper containing surface to substantially block incident light while cleaning the copper containing surface with the acidic cleaning solution in a cleaning process.

- 11. (previously presented) The method of claim 10, wherein the copper containing surface comprises copper filled metal interconnects.
- 12. (original) The method of claim 10, wherein the incident light has a wavelength of between about 300 nanometers and about 800 nanometers.
- 13. (cancelled)

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14. (previously presented) The method of claim 10, wherein the acidic cleaning solution has a pH of between about 3.0 to about 4.5.

15. (cancelled)

- 16. (previously presented) The method of claim 10, wherein the cleaning process comprises contacting the copper containing surface with the acidic cleaning solution according to at least one of a dipping process, a brushing process, and a megasonic cleaning process.
- 17. (previously presented) The method of claim 16, wherein the cleaning process comprises an automated process for processing the substrate at a plurality of cleaning stations.
- 18. (previously presented) The method of claim 16, wherein the step of shielding comprises placing a light blocking means between the incident light and the cleaning process.
- 19. (previously presented) The method of claim 18, wherein placing a light blocking means comprises placing a light blocking means to at least partially surround the cleaning process.

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- 20. (previously presented) The method of claim 17 wherein the step of shielding comprises placing a light blocking means to at least partially surround each of the plurality of cleaning stations.
- 21. (previously presented) The method of claim 10, wherein the copper containing surface comprises copper oxide.